ABSTRACT

Magnetic thin film having high spin polarizability and a magnetoresistance effect device and a magnetic device using the same, provided with a substrate (2) and $Co_2MGa_{1-x}Al_x$ thin film (3) formed on the substrate (2), the $Co_2MGa_{1-x}Al_x$ thin film (3) has a $L2_1$ or B2 single phase structure, M of the thin film is either one or two or more of Ti, V, Mo, W, Cr, Mn, and Fe, an average valence electron concentration Z in M is $5.5 \leqq Z \leqq 7.5$, and $0 \leqq x \leqq 0.7$, shows ferromagnetism at room temperature, and can attain high spin polarizability. A buffer layer (4) may be inserted between the substrate (2) and the $Co_2Fe_xCr_{1-x}Al$ thin film (3). The tunnel magnetoresistance effect device and the giant magnetoresistance effect device using this magnetic thin film can attain large TMR and GMR at room temperature under the low magnetic field.